

UNITED STATES PATENT APPLICATION

OF

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FOR

METHOD OF CONTROLLING DRUM TYPE WASHING

MACHINE

[0001] This application claims the benefit of Korean Application(s) No. 10-2002-0075039 filed on November 28, 2002, which is/are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to a washing machine, and more particularly, to a method of controlling a drum type washing machine according to a temperature of water.

Discussion of the Related Art

[0003] FIG. 1 is a perspective view of a drum type washing machine according to a related art.

[0004] Referring to FIG. 1, a drum type washing machine consists of a washing tub 4 for washing a laundry, a dewatering tub (not shown in the drawing) outside the washing tub 4, a case 8 holding a driving equipment for driving the washing tub 4 and the dewatering tub, a door 1 at a front side of the case 8 for putting the laundry in or pull out of the washing tub 4, a control unit 5 for controlling an operation of the drum type washing machine, a cold water pipe 7 supplying cold water to the washing tub 4, a hot water pipe 6 supplying hot water to the washing tub 4, and a drainpipe 9 discharging water of the washing tub 4 outside.

[0005] The door 1 consists of a door body 2 opening/closing an opening of the washing tub 4 and a door window 3, which is made of a transparent material to view an inside of the washing tub 4 with the closed door body 2, installed at a central part of the door body 2.

[0006] In the above-constructed drum type washing machine, after water, detergent, and laundry are put in the washing tub 4 having a plurality of protrusions inside, the washing tub 4 is rotated at low speed centering around a horizontal axis to a ground on which the drum type washing machine is set up. The laundry is then lifted up by the protrusions to fall for

performing washing. Different from a pulsator type washing machine, the drum type washing machine prevents damage or entanglement of the laundry as well as reduces water consumption. In this case, the pulsator type washing machine performs washing in a manner that the laundry is rotated by a pulsator to use friction between water and the rotated laundry.

5 **[0007]** FIG. 2 is a flowchart of a method of controlling a drum type washing machine according to a related art.

[0008] A method of controlling a drum type washing machine according to a related art is explained by referring to FIG. 1 and FIG. 2 as follows, in which a control processing is generally handled by a central control unit (not shown in the drawing) built in the drum type
10 washing machine.

[0009] First of all, once power is turned on, a central control unit checks a washing method (S10, S20). The washing method is divided into automatic washing and manual washing in general. The automatic washing means that washing is performed according to a previously set washing condition, whereas the manual washing means that washing is
15 performed according to a condition set up by a user himself (S35).

[0010] If the automatic washing is selected, a laundry amount is sensed. A washing condition is then determined according to the sensed laundry amount (S30). In this case, the washing condition, which includes a water level according to the laundry amount, a washing, and the like, was previously set up.

20 **[0011]** Once the washing condition is determined, the central control unit turns on a water supply valve to supply water up to the water level and then turns off the water supply valve to terminate water supply (S40~S60). Thereafter, washing is performed according to the determined washing condition (S70).

[0012] However, in the related art method of controlling the drum type washing

machine, the washing condition of the automatic washing is determined by the laundry amount only regardless of a temperature variation of the water. Namely, in using hot water for washing, the washing machine is unnecessarily driven for a considerably long time, thereby wasting energy as well as failing to implement an optimal washing efficiency.

5 **[0013]** Moreover, a time taken for a detergent to dissolve and a time taken for filth to come off vary according to whether the water is hot or cold. Since the washing condition depends on the laundry amount only in case of the automatic washing, the variations of elements affecting such a washing time as a time taken for a detergent to dissolve, a time taken for filth to come off, and the like are inapplicable to the washing condition. Namely, in
10 case of using hot water for washing, the time for the detergent to dissolve is reduced and the filth comes off fast. Yet, the related art fails to utilize such advantages.

SUMMARY OF THE INVENTION

15 **[0014]** Accordingly, the present invention is directed to a method of controlling a drum type washing machine that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

[0015] An object of the present invention, which has been devised to solve the foregoing problem, lies in providing a method of controlling a drum type washing machine, in which a washing condition is varied according to a water temperature.

20 **[0016]** Additional features and advantages of the invention will be set forth in the description which follows, and in part will be apparent to those having ordinary skill in the art upon examination of the following or may be learned from a practice of the invention. The objectives and other advantages of the invention will be realized and attained by the subject matter particularly pointed out in the specification and claims hereof as well as in the

appended drawings.

[0017] To achieve these objects and other advantages in accordance with the present invention, as embodied and broadly described herein, there is provided a method of controlling a drum type washing machine including a step (a) of checking whether an automatic washing or a manual washing is selected if power of the drum type washing machine is turned on, a step (b) of turning on a water supply valve by receiving an input of a washing condition from a user in direct if the manual washing is selected or sensing a laundry amount in a washing tub and then turning on the water supply valve to sense a temperature of water, and a step (c) of supplying the water up to a setup water level, turning off the water supply valve, and performing a washing on a washing condition set up previously according to the sensed laundry amount and the sensed temperature of the water.

[0018] In this case, the step (c) includes the steps of performing a washing on a first washing condition by judging that the water is cold if the sensed temperature is below a predetermined degree and performing the washing on a second washing condition by judging that the water is hot if the sensed temperature is above a predetermined degree.

[0019] It is to be understood that both the foregoing explanation and the following detailed description of the present invention are exemplary and illustrative and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

[0021] FIG. 1 is a perspective view of a drum type washing machine according to a related art;

[0022] FIG. 2 is a flowchart of a method of controlling a drum type washing machine according to a related art; and

5 [0023] FIG. 3 is a flowchart of a method of controlling a drum type washing machine according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

10 [0024] Reference will now be made in detail to the preferred embodiment(s) of the present invention, examples of which are illustrated in the accompanying drawings. Throughout the drawings, like elements are indicated using the same or similar reference designations where possible.

[0025] FIG. 3 is a flowchart of a method of controlling a drum type washing machine according to the present invention.

15 [0026] Referring to FIG. 3, in a method of controlling a drum type washing machine according to one embodiment of the present invention, a water temperature of automatic washing is divided into 'hot' and 'cold' to determine a washing condition separately. Namely, a central control unit (not shown in the drawing) senses a temperature of water supplied from a water supply valve. The central control unit judges that the water is cold if the temperature
20 of the water is below a predetermined temperature, whereby washing is executed on a first washing condition. And, the central control unit judges that the water is hot if the temperature of the water is above the predetermined temperature, whereby washing is executed on a second washing condition.

[0027] The control method according to the embodiment of the present invention is

explained in detail as follows.

[0028] First of all, once power is turned on, a central control unit checks a washing method (S100, S110). If the manual washing is selected as a result of the checking, washing is performed by having a user input a washing condition in direct IS125). And, the central control unit turns on a water supply valve (S150) to supply water up to a predetermined water level and then turns off the water supply valve (S160, S170). Thereafter, the central control unit executes washing according to the inputted washing condition (S180).

[0029] If the automatic washing is selected as a result of the checking, the central control unit turns on the water supply valve and then checks a temperature of water (S120, S130). If the temperature of the water is below a predetermined degree, the water is judged as cold to set the washing condition to a first washing condition (S143). If the temperature of the water is above the predetermined degree, the water is judged as hot to set the washing condition to a second washing condition (S147). In this case, the first and second washing conditions, which include such elements as a water level according to a laundry amount and a temperature, a washing time, and the like, are previously set up.

[0030] Once the washing condition is determined, the central control unit supplies water up to the water level and then turns off the water supply valve to terminate water supply. Thereafter, washing is performed according to the setup washing condition (S160~S180).

[0031] Moreover, a method of controlling a drum type washing machine according to another embodiment of the present invention includes the steps of setting up a previous washing condition according to a temperature of water in automatic washing, storing the setup washing condition in a predetermined memory (not shown in the drawing) in a manner of 'look-up table' or the like, and determining a new washing condition by referring to the look-up table.

[0032] Namely, the central control unit senses the temperature of the water supplied from the water supply valve and then performs the washing according to the washing condition determined by the sensed temperature. In this case, the washing condition includes the water level and washing time according to temperature as well as the previous water level
5 according to the laundry amount and the washing time.

[0033] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover such modifications and variations, provided they come within the scope of the appended claims and their equivalents.